ABSTRACT OF THE DISCLOSURE

A magnetoresistance effect element comprises: a magnetoresistance effect film, a pair of electrodes, and a phase separation layer. The magnetoresistance effect film includes a first ferromagnetic layer whose direction of magnetization is pinned substantially in one direction, a second ferromagnetic layer whose direction of magnetization changes in response to an external magnetic field, and an intermediate layer provided between the first and second ferromagnetic layers. The pair of electrodes are electrically coupled to the magnetoresistance effect film and configured to supply a sense current perpendicularly to a film plane of the magnetoresistance effect film. The phase separation layer is provided between the pair of electrodes. The phase separation layer has a first phase and a second phase formed by a phase separation in a solid phase from an alloy including a plurality of elements. One of the first and second phases includes at least one element selected from the group consisting of oxygen, nitrogen, fluorine and carbon in higher concentration than other of the first and second phases.